

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of developing an interactive system performed by a computer system having data processing logic and computer readable storage media with one or more computer programs stored thereon, comprising using the computer system to:

inputting receive an application file including application data representative of an application for said system, said application data including operations and input and return parameters, with parameter types, for said application;

generating generate a dialogue state machine, including a number of procedures with variables, on the basis of said application data, said state machine including slots for each operation and each input parameter, said slots defining data on which said interactive system executes the operations;

generating generate prompts on the basis of said application data including a prompt listing said operations;

generating generate grammar on the basis of said application data, said grammar including slots for each operation and input parameters to return data of said parameter types to said state machine; and

executing execute grammatical inference to enhance the grammar on the basis of observations recorded by said system, including executing a model merging process that includes:

processing rules of the grammar;

creating additional rules representative of repeated phrases; and

merging equivalent symbols of the grammar;

wherein said rules define said slots and include said symbols.

2. (Original) A method as claimed in claim 1, wherein said prompts and grammar are generated on the basis of a predetermined pattern or structure for said prompts and grammar.
3. (Original) A method as claimed in claim 2 wherein said grammar includes predefined grammar.
- 4-5. (Canceled)
6. (Previously Presented) A method as claimed in claim 3, wherein said slots include value data representing the meaning of phrase or term of a slot.
- 7-9. (Canceled)
10. (Previously Presented) A method as claimed in claim 1, wherein said rules include slot specification rules including key value data representing the meaning of a phrase or term for a slot.
11. (Previously Presented) A method as claimed in claim 1, wherein said grammar is hierarchical and said rules include terminal and/or non-terminal symbols, whereby said rules refer to lower level rules to resolve non-terminal symbols.
12. (Previously Presented) A method as claimed in claim 11, wherein said rule creating step includes generating a non-terminal symbol rule from correlated symbols and slot specification rules.
13. (Original) A method as claimed in claim 12, wherein said merging step includes identifying interchangeable symbols on the basis of predetermined merging evidence patterns.
14. (Original) A method as claimed in claim 13, wherein said merging step includes determining whether symbols to be merged have compatible slot specification rules and return corresponding slots.
15. (Original) A method as claimed in claim 14, wherein said rules include a hyperparameter representing use of the rule in observations parsed during said grammatical inference.

16. (Original) A method as claimed in claim 15, wherein said evidence patterns represent relationships between rules indicating a merger and corresponding rule formats to be generated when one of said relationships exist between said rules.
17. (Previously Presented) A method as claimed in claim 1, wherein said rules include a reference count representing the number of other rules that reference the rule.
18. (Previously Presented) A method as claimed in claim 1, wherein said additional rules are determined on the basis of attribute constraints representing a correlation between slots of a rule and slots of said observations during said creating step.
19. (Currently Amended) A grammatical inference method for developing grammar performed by a computer system having data processing logic and computer readable storage media with one or more computer programs stored thereon, including using the computer system to processing process rules of the grammar, ~~creating~~ create additional rules representative of repeated phrases, and ~~merging~~ merge equivalent symbols of the grammar, wherein said rules define slots to represent data on which an interactive system executes operations and include symbols representing at least a phrase or term.
20. (Original) A method as claimed in claim 19, wherein said rules include slot specification rules including key value data representing the meaning of a phrase or term for a slot.
21. (Previously Presented) A method as claimed in claim 19, wherein said grammar is hierarchical and said rules include terminal and/or non-terminal symbols, whereby said rules refer to lower level rules to resolve non-terminal symbols.
22. (Previously Presented) A method as claimed in claim 21, wherein said rule creating step includes generating a non-terminal symbol rule from correlated symbols and slot specification rules.
23. (Original) A method as claimed in claim 21, wherein said merging step includes identifying interchangeable symbols on the basis of predetermined merging evidence patterns.

24. (Original) A method as claimed in claim 23, wherein said merging step includes determining whether symbols to be merged have compatible slot specification rules and return corresponding slots.
25. (Original) A method as claimed in claim 21, wherein said rules include a hyperparameter representing use of the rule in observations parsed during said grammatical inference.
26. (Original) A method as claimed in claim 23, wherein said evidence patterns represent relationships between rules indicating a merger and corresponding rule formats to be generated when one of said relationships exist between said rules.
27. (Original) A method as claimed in claim 19, wherein said rules include a reference count representing the number of other rules that reference the rule.
28. (Previously Presented) A method as claimed in claim 19, wherein said additional rules are determined on the basis of attribute constraints representing a correlation between slots of a rule and slots of said observations during said creating step.
29. (Previously Presented) A development tool for an interactive system having code, stored on a computer readable media, for executing the steps of the method as claimed in claim 1.
30. (Previously Presented) An interactive system developed using the method as claimed in claim 1.
31. (Previously Presented) A system for developing an interactive system, comprising:
means for inputting an application file including application data representative of an application for said system, said application data including operations and input and return parameters, with parameter types, for said application;
means for generating a dialogue state machine, including a number of procedures with variables, on the basis of said application data, said state machine including slots for each operation and each input parameter, said slots defining data on which said interactive system executes the operations;

means for generating prompts on the basis of said application data including a prompt listing said operations;

means for generating grammar on the basis of said application data, said grammar including slots for each operation and input parameters to return data of said parameter types to said state machine; and

means for executing grammatical inference to enhance the grammar on the basis of observations recorded by said system, including means for executing a model merging process that includes:

processing rules of the grammar;

creating additional rules representative of repeated phrases; and

merging equivalent symbols of the grammar;

wherein said rules define said slots and include said symbols.

32. (Previously Presented) A development tool for an interactive system, stored on a computer readable media, comprising:

code for inputting an application file including application data representative of an application for said system, said application data including operations and input and return parameters, with parameter types, for said application;

code for generating a dialogue state machine, including a number of procedures with variables, on the basis of said application data, said state machine including slots for each operation and each input parameter, said slots defining data on which said interactive system executes the operations;

code for generating prompts on the basis of said application data including a prompt listing said operations;

code for generating grammar on the basis of said application data, said grammar including slots for each operation and input parameters to return data of said parameter types to said state machine; and

code for executing grammatical inference to enhance the grammar on the basis of observations recorded by said system, including code for executing a model merging process that includes:

- processing rules of the grammar;
 - creating additional rules representative of repeated phrases; and
 - merging equivalent symbols of the grammar;
- wherein said rules define said slots and include said symbols.

33. (Previously Presented) A method as claimed in claim 10, wherein said grammar is hierarchical and said rules include terminal and/or non-terminal symbols, whereby said rules refer to lower level rules to resolve non-terminal symbols.
34. (Previously Presented) A method as claimed in claim 16, wherein said rules include a reference count representing the number of other rules that reference the rule.
35. (Previously Presented) A method as claimed in claim 17, wherein said additional rules are determined on the basis of attribute constraints representing a correlation between slots of a rule and slots of said observations during said creating step.
36. (Previously Presented) A method as claimed in claim 20, wherein said grammar is hierarchical and said rules include terminal and/or non-terminal symbols, whereby said rules refer to lower level rules to resolve non-terminal symbols.
37. (Previously Presented) A development tool for an interactive system having code stored on a computer readable media for executing the steps of the method as claimed in claim 19.
38. (Previously Presented) An interactive system developed using the method as claimed in claim 19.
39. (Previously Presented) A method as claimed in claim 1, wherein said creating step is performed on the basis of observations recorded by said system.